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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/634,887	08/06/2003	Hideki Takasu	241150US2S CONT	7537
22850	7590	12/16/2004	EXAMINER	
OBLON, SPIVAK, MCCLELLAND, MAIER & NEUSTADT, P.C. 1940 DUKE STREET ALEXANDRIA, VA 22314			LEE, BENNY T	
			ART UNIT	PAPER NUMBER
			2817	

DATE MAILED: 12/16/2004

Please find below and/or attached an Office communication concerning this application or proceeding.



UNITED STATES DEPARTMENT OF COMMERCE  
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SERIAL NUMBER	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.
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EXAMINER
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ART UNIT	PAPER NUMBER
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DATE MAILED:

This is a communication from the examiner in charge of your application.  
COMMISSIONER OF PATENTS AND TRADEMARKS

☒ This application has been examined ☒ Responsive to communication filed on 29 Sept 2004 ☐ This action is made final.

A shortened statutory period for response to this action is set to expire Three (3) month(s), 30 days from the date of this letter.  
Failure to respond within the period for response will cause the application to become abandoned. 35 U.S.C. 133

Part I THE FOLLOWING ATTACHMENT(S) ARE PART OF THIS ACTION:

- |   |   |
|---|---|
| 1. <input checked="" type="checkbox"/> Notice of References Cited by Examiner, PTO-892. | 2. <input type="checkbox"/> Notice of Draftsman's Patent Drawing Review, PTO-948. |
| 3. <input checked="" type="checkbox"/> Notice of Art Cited by Applicant, PTO-1449.      | 4. <input type="checkbox"/> Notice of Informal Patent Application, PTO-152.       |
| 5. <input type="checkbox"/> Information on How to Effect Drawing Changes, PTO-1474.     | 6. <input type="checkbox"/>   |

Part II SUMMARY OF ACTION

1. ☒ Claims 1-18 are pending in the application.  
Of the above, claims 4-6, 12-16, 18 are withdrawn from consideration.
2. ☐ Claims \_\_\_\_\_ have been cancelled.
3. ☐ Claims \_\_\_\_\_ are allowed.
4. ☒ Claims 1, 3; 7, 9, 10, 11; 17 are rejected.
5. ☒ Claims 2; 8 are objected to.
6. ☒ Claims 1-18 are subject to restriction or election requirement.
7. ☐ This application has been filed with informal drawings under 37 C.F.R. 1.85 which are acceptable for examination purposes.
8. ☐ Formal drawings are required in response to this Office action.
9. ☐ The corrected or substitute drawings have been received on \_\_\_\_\_. Under 37 C.F.R. 1.84 these drawings are ☐ acceptable; ☐ not acceptable (see explanation or Notice of Draftsman's Patent Drawing Review, PTO-948).
10. ☐ The proposed additional or substitute sheet(s) of drawings, filed on \_\_\_\_\_, has (have) been ☐ approved by the examiner; ☐ disapproved by the examiner (see explanation).
11. ☐ The proposed drawing correction, filed \_\_\_\_\_, has been ☐ approved; ☐ disapproved (see explanation).
12. ☒ Acknowledgement is made of the claim for priority under 35 U.S.C. 119. The certified copy has ☒ been received ☐ not been received ☐ been filed in parent application, serial no. \_\_\_\_\_; filed on \_\_\_\_\_.
13. ☐ Since this application appears to be in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under Ex parte Quayle, 1935 C.D. 11; 453 O.G. 213.
14. ☐ Other

EXAMINER'S ACTION

PTOL-326 (Rev. 2/93)

SN 634887

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Applicant's election with traverse of Group I, claims 1-3, 7-11, 17 in the reply filed on 24 September 2004 is acknowledged. The traversal is on the ground(s) that the examiner has not established an undue burden in examination of the invention warranting a restriction requirement. This is not found persuasive because the examiner has indeed established an undue burden in examination by virtue of the divergent nature of the subject matter claimed in each grouping. As previously pointed out in the restriction requirement, although the identified grouping of inventions involve phase shifters with substantially the same classification, each grouping provides sufficiently different structural features and characteristics which provide for different modes of operation. Therefore an undue burden in examination would taken place if the divergent features and characteristics of each grouping were to be searched together, despite the common classification, thereby establishing the appropriateness of the different groups and of the restriction requirement.

The requirement is still deemed proper and is therefore made FINAL.

Claims 4-6, 12-16, 18 are withdrawn from further consideration pursuant to 37 CFR 1.142(b), as being drawn to a nonelected invention, there being no allowable generic or linking claim. Applicant timely traversed the restriction (election) requirement in the reply filed on 24 September 2004.

The disclosure is objected to because of the following informalities: Page 3, line 22, note that "BRIEF" should be deleted as being unnecessary. Page 4, line 18, note that "THE SEVERAL VIEWS OF" should be deleted as being unnecessary. Page 5, line 21; page 7, lines 17, 21, page 10, lines 13, 15: note that --reference label-- should

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precede "11" (p. 5, l. 21); "1" (p. 7, l. 17; p. 10, l. 13); "C1" (p. 7, l. 21), "c" (p. 10, l. 15), respectively. Appropriate correction is required.

The drawings are objected to because in fig. 6, amplifier "24" should correctly be --25 --, phase shifter "25" should correctly be --24-- and power monitor device "21" should correctly be --28 --. Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

The specification is objected to as failing to provide proper antecedent basis for the claimed subject matter. See 37 CFR 1.75(d)(1) and MPEP § 608.01(o). Correction of the following is required: the bias voltage being a stepwise fashion" (e.g. cls. 3, 9) needs disclosure in the specification.

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The following claims have been found objectionable for reasons set forth below:

In claim 1, lines 3, 5, 6, 8; claim 7, lines 18, 19, 20, 23; claim 17, lines 3, 5, 7, 11: note that "formed" should be rewritten as --disposed at each occurrence.

Note that in the following claims, at the instances below, the term --respective-- should precede the indicated words: "phase shifters" (cl. 7, ls 10, 12; cl. 10, l. 2); "transmission line" (cl. 7, l. 17); "first" (cl. 7, l. 23); "bias circuit" (cl. 7, ls 21, 22); "active layer" (cl. 7, l. 23); "bias circuit" (cl. 7, l. 24; cl. 8, l. 2); "bias voltage" (cl. 7, l. 26; cl. 8, l. 3; cl. 9, l. 2; cl. 11, l. 5).

Note that in the following claims, at the instances below: the term --corresponding-- should precede the indicated words: "semi-insulating" (cl. 7, ls 18, 24, 25); "transmission line" (cl. 7, ls 21, 23, 26; cl. 8, l. 4); "phase shifter" (cl. 7, l. 29); "power amplifier" (cl. 10, l. 3).

In claim 7, line 7, should "which adjusts" be rephrased as --for adjusting-- for clarity of description?; line 11, should --ones of the plurality of transmission-- precede "paths" for consistency of description?; line 16, should --each-- follow "wherein" for clarity of description?

In claim 8, line 3, should "a" be rewritten as --the-- for consistency of description?

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless --

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

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Claims 1, 3 are rejected under 35 U.S.C. 102(b) as being clearly anticipated by either Neidert et al or MacLeay et al.

Neidert et al (fig. 1b) discloses a microwave phase shifter comprising a circuit board having semiconducting layers (22, 28, 30). A transmission line (i.e. Schottky microstrip 12) is disposed on a first surface of the circuit board. A metallic ground plane layer is disposed on a second opposite surface (26) of the circuit board. A conductive layer (e.g. ohmic contact 18 or 20) is disposed on the circuit board first surface as to be coplanar to the transmission line and includes a longitudinal edge or end portion which is in proximity to the transmission line (see fig. 1a). Note that an active depletion region is formed under the transmission line and in response to an applied bias voltage (e.g. in incremental steps as shown in fig. 2) can actively change the amount of depletion associated therewith. Note that since the circuit board has been characterized as being semiconducting, then it would have stood to reason that the circuit board would inherently have been characterized as semi-insulating.

MacLeay et al discloses a microwave phase shifter comprising a semiconductor wafer (10) having a signal line (16) disposed on a first surface thereof. A ground plane layer (12) is disposed on a second opposite surface of wafer (10). Note that a conductive layer (14) is disposed on the first surface and includes an edge or end portion which is in proximity to signal line (16). As evident from fig. 2, an active semiconductor region (20) is formed under signal line (16) and is responsive to a bias circuit (24, 26) to provide a bias voltage to the active region. Note from fig. 4 that the bias voltage is a continuous function relative to phase shift. Again, note that wafer (10),

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being characterized as a semiconductor, would also have inherently been characterized as a semi-insulator.

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claim 17 is rejected under 35 U.S.C. 103(a) as being unpatentable over Neidert et al.

As described in the preceding rejection, Neidert et al discloses the claimed invention except for the ground terminal as claimed. However, as described at col. 5, lines 19-24, the ohmic contacts serve as a means for connecting the layer (28) to the ground electrical potential (i.e. the metallic ground plane). Accordingly, the resultant electrical obviously provides for a ground terminal, as known to those of ordinary skill in the art.

Claims 7, 9, 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Agar, Jr. et al in view of Neidert et al.

Agar, Jr. et al (fig. 1) discloses a power amplifier circuit (16) comprising a distributor (10), a plurality of amplifiers (20), input/output phase adjusting circuits (12, 14) and synthesizer/combiner (15). As evident from fig. 3, the phase adjusting circuits (12, 14) include a plurality of transmission paths (22, 23) including a reference path (i.e. no phase shift) and a plurality of transmission line paths with transmission line phase shift elements. However, Agar, Jr et al differs from the claimed invention in that the phase shift elements are not of the variable voltage adjustable type.

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As described above, Neidert et al discloses a transmission line type phase shifter whose phase shift is adjustable through an applied bias voltage.

Accordingly, it would have been obvious to have modified the generic transmission line phase shift elements (26) in Agar, Jr et al with the specific adjustable transmission line phase shifters of Neidert et al. Such a modification would have been considered an obvious substitution of art recognized equivalent transmission line phase shifters, whose compatability would have suggested the obvious modification.

Claim 11 is rejected under 35 U.S.C. 103(a) as being unpatentable over the preceding rejection as applied to claim12 above, and further in view of the Japanese ('660) abstract (cited by applicant).

The above combination meets the claimed invention except for a monitor and a control device as claimed.

The Japanese ('600) abstract (fig. 2) provides an exemplary teaching of a monitor or detector (5) measuring the output response of the electric circuit and generating a signal to control circuit (15) which in turn provides a control/bias voltage to adjust the phase shift of phase shifter (7).

Accordingly, it would have been obvious in view of the references, taken as a whole, to have added a monitor and a control circuit to the amplifier circuit of the above combination. Such a modification would have been considered obvious since it would have provided the advantageous benefit of automatically controlled phase shift adjustment for the transmission line phase shift elements in the amplifier circuit of the combination, thereby suggesting the obviousness of such modification.



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The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Tran et al pertains to a transmission line phase shifter with an active region underneath the transmission line.

Any inquiry concerning this communication should be directed to Benny Lee at telephone number (571) 272-1764.

Lee/ds

12/07/04.



BENNY T. LEE  
PRIMARY EXAMINER  
ART UNIT 2817